

# PATENT ABSTRACTS OF JAPAN

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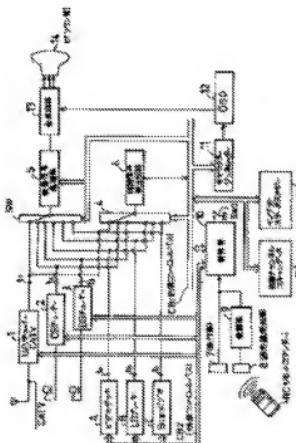
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## (54) TELEVISION SET

### (57)Abstract:

PURPOSE: To discriminate a channel at a glance by displaying the channel number in which a video signal exists in a receiving channel and the channel number in which the signal does not exist, on a monitor by different display formats.

CONSTITUTION: A synthesizing circuit 13 synthesizes a character, and graphic information outputted from a character generator 11 and outputs them to a CRT 14, and an input status memory 16 stores receiving and operating states of each tuner 1 and an external apparatus. In such a state, by an operating button of an operating part 7, all receiving channels of the tuner 1 are scanned, a switch 4 is switched successively, and channels of tuners 2, 3 are scanned. Subsequently, the channel having a broadcasting radio wave is stored in an input status memory 16. When a channel status provided in the operating part 7 is inputted to a control part 10, the generator 11 outputs discriminating information to a cathode ray tube 14 at every tuner 1, 2. As a result, in accordance with whether a video signal exists or not, the channel number can be displayed in a different shape.



### Claim(s)]

[Claim 1]A television receiver comprising:

A channel scan control part which chooses a receiving channel of a tuner built in or connected to a television receiver one by one.

A video-signal detection means to check that a video signal exists in a receiving channel which was in a receive state by this channel scanning means.

A receiving channel displaying means which displays a channel number in which a video signal exists, and a channel number in which a video signal does not exist on a monitoring screen by a different

display style.

[Claim 2]A television receiver given in the 1st paragraph of Claims that detects a junction state of two or more AV equipment connected to an external input terminal of a television receiver, and is characterized by an operating state of said AV equipment enabling it to display on a screen.

## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Industrial Application]This invention is concerned with a television receiver, is provided with the tuner which receives each broadcast channel, such as VHF, UHF, CATV, BS broadcasting, and CS broadcasting, and relates to the television receiver which can connect two or more external instruments.

[0002]

[Description of the Prior Art]These days, as it was called VHF, UHF, CATV, BS broadcasting, CS broadcasting, etc., the receivable number of channels can also increase with the increase in media, and the user can choose a channel now liking and if needed from many channels. Also about an external instrument, VTR, LD player, an 8mm video deck, etc. become possible [ connecting two or more external instruments ], and can appreciate now a movie and various software like music.

[0003]

[Problem(s) to be Solved by the Invention]However, although the number of receivable channels increased about television broadcasting, The channel which actually has broadcast also in it is restricted, and a broadcasting electric-wave cannot be received in all channels, It is increasing, also when the channel which has not received the broadcasting electric-wave when a user looks for a channel to see, for example by channel rise / down key is chosen. In this case, although the memory only of the required channel can be carried out using a channel preset function, it is complicated and the general user is hard to use. In the television receiver more than which external input terminals increased in number. If the user does not grasp each external instrument and the relation of an input terminal, when you will watch the playback program of VTR connected to the terminal of the video channel 3, for example and the video channel 1 is chosen, the channel which is not outputted at all on a screen is often chosen.

[0004]

[Means for Solving the Problem]It is what was accomplished in order that a television receiver of this invention might solve such a problem, It connects with said television receiver by forming a receiving channel detection means in a control section, Or each tuner built in or a channel with which a video signal from an external instrument connected exists is detected by scan operation, and it is constituted so that a channel with which a video signal exists may be identified on a screen and can display.

[0005]

[Function] Since a receiving channel detection means can detect the broadcast channel and external channel with which a video signal exists and can carry out a screen display of this broadcast channel by scan operation, The channel with which the broadcast channel or video signal of ability ready for receiving exists a broadcasting electric-wave can be seen at a glance, and can be identified.

[0006]

[Example] Working example of the television receiver of this invention is described below.

drawing 1 -- the television receiver of this example -- especially a video chain system is used as a block diagram. 1 shows a U/V tuner, 2 shows a CS tuner, 3 shows a BS tuner, it is connected to external input terminal  $t_1$ ,  $t_2$ , and  $t_3$ , and said each tuner chooses each broadcasting station, respectively. A shows a videocassette recorder, B shows a laser disc player, C shows an 8mm video deck, and the external instrument connected to input terminal [ of one video ]  $t_a$ , input terminal [ of two videos ]  $t_b$ , and input terminal [ of three videos ]  $t_c$ , respectively is shown. [0007]. 4 is being interlocked with the switch SW which chooses the video signal which it is going to see with a television receiver. 5 from the change over switch for synchronized signal detection, and the video signal inputted via the switch SW Separation of a chrominance signal, The video signal processing section which performs color-difference-signal formation and extraction of a synchronized signal, and 10 via internal control bus CB1 each above-mentioned functional circuit, Or the control section which controls said each tuner and an external instrument via external control bus CB2, The final controlling element which provided the manual operation button of the various function in which a user operates 7, and 8 show the infrared light sensing portion which inputs the manipulate signal from remote commander RC which provided the manual operation button of the various function, The inputted manipulate signal is inputted into the control section 10 via the demodulation section 9, and processing of up and down of volume, channel selection, etc. is performed.

[0008] 11 character JUNE Lother and 12 an onscreen display and 13 The video signal from the video signal processing section 5, The character outputted by character JUNE Lother 11, the synthetic circuit which compounds graphic information and is outputted to CRT(cathode-ray tube) 14, The automatic channel scan data in which 15 scans the broadcast channel of ability ready for receiving, and 16 show the input status memory which memorizes the receiving situation and the situation of operation of said each tuner and an external instrument.

[0009] When the television receiver of this invention is provided with each circuit block of above-mentioned drawing 1, ON and OFF of a power supply, selection of a broadcasting station, etc. are performed by the manual operation button provided, for example in the final controlling element 7 as well as the usual television receiver.

[0010] Then, the operation in the case of scanning the broadcast channel of the television set of this invention is explained according to the flow chart of drawing 2. First, when the power supply of a television receiver is turned on, the control section 10, Switch the change over switch 4 to the U/V tuner 1 (F11), and from 1ch, scan a receive state one by one and it goes (F12), The input status memory 16 memorizes the channel with which the synchronized signal was detected

by the synchronizing signal detecting circuit 6, i.e., the channel with which a broadcasting electric-wave exists, (F14).

[0011]Thus, all the receiving channels of the U/V tuner 1 are scanned, After memory of the channel with which a broadcasting electric-wave exists finishes (F15), the control section 10 switches the change over switch 4 to CS tuner 2 (F21), Scan all the channels like the case of the U/V tuner 1, and it goes (F22), After it carries out the memory of the channel with a broadcasting electric-wave (F24) and also all the channel scans of CS tuner 2 finish (F25), The change over switch 4 is switched to a BS tuner (F31), and the channel of a BS tuner is scanned like the case of the U/V tuner 1 and CS tuner 2, it goes (F32), and the memory of the channel with a broadcasting electric-wave is carried out (F34).

[0012]Next, the case where the identification information of the receiving channel memorized by the input status memory 16 is outputted to a screen is explained. . [ whether when a user needs the identification information of a receiving channel, the channel stator skiing formed in the final controlling element 7 or the remote commander is inputted, and ] Or when an input menu is selected with a shuttle ball, input stay TASUMEMORI 16 with the control signal from the control section 10. Channel identification information is outputted to the character generator 11, and it is made to output receiving channel identification information to the cathode-ray tube 14 for every tuner via the onscreen display 12.

[0013]Each figure of drawing 3 (a) and 3 (b) is an explanatory view when the receiving channel identification information for every tuner is outputted to a screen. The range of M shown in the left-hand side of each figure displays the identification information of the selected tuner on the range of S which shows of which tuner the user has chosen identification information now, and has been shown in right-hand side. Although drawing 3 (a) is a display example at the time of displaying the identification information of VHF broadcasting on a screen, for example, it indicates that it has chosen VHF first in distinction from the display of other tuners currently displayed on the range of the same M in the range of a display called VHF of the range of M.

[0014]All of channel 1ch which can receive a VHF tuner - 12ch are displayed on the range of S which displays identification information, As it can identify that there is a broadcasting electric-wave in distinction from the display of each channel of 2, 5, 7, 9, and 11 which have a broadcasting electric-wave, for example, do not have a broadcasting electric-wave in it in the display of each channel of 1, 3, 4, 6, 8, 10, and 12, it displays on a screen.